
Preface

The envious billows sidelong swell to whelm my track; let them; but
first I pass (*Captain Ahab; Moby Dick*)

The essential function of the secretory proteins is to sense the environment and to drive the correct development of monocellular and, especially, pluricellular organisms. These polypeptides mediate fundamental processes in all the living organisms, such as cell-to-cell communication, defense response, and many others. Protein secretion is essentially achieved by two mechanisms. In the classic secretory pathway, proteins travel from the endoplasmic reticulum (ER), where they are inserted thanks to an amino acidic N-terminal signal peptide (SP) sequence, through the Golgi apparatus and finally reach the extracellular space or the lysosome/vacuole. Alongside this well-characterized route, an unconventional protein secretion (UPS) has been described which incorporates all the mechanisms that do not follow the “classical way.” UPS has grown in importance in cell biology studies due to the increasing number of SP lacking proteins (leaderless proteins, LSPs) recovered in the extracellular space of many organisms. Even though some mechanisms that underlie this type of protein traffic have already been described, there is still much to be discovered and probably many new routes will be described in the next future. This book has the purpose to present the relevant background and methodologies nowadays available for UPS study. It has been thought and written with the aim to explore the latest techniques and protocols that have been successfully applied for UPS analysis in different laboratories around the world. Detailed chapters include an overview of conventional and unconventional secretory pathways along with multidisciplinary approaches and methods used for UPS analysis in different organisms. This book will be useful for all the researchers interested in the secretory pathway field as well as for studies in cell biology, cell development, biomedical research, and healthcare.

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Methods and Protocols

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